

# **AR-B8601 Board**

## **VIA EDEN , VGA, LAN, DDR2**

## **PCI, COM, 4 USB**

# **User Manual**

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**Book Number: AR-B8601-2009.09.23**

## Revision

Version	Date	Author	Description
1.0	2009.09.23	Max	Release

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Manual's first edition:

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# 1 INTRODUCTION

Acrosser's Microbox Networking device AR-N8601 is a small, cost-effective and entry-level UTM (Unified Threat Management) hardware, which is suitable for small office. The Board of this microbox is AR-B8601. Based on VIA CN700 with ULV Eden 500MHz CPU, the AR-B8601 generates very low heat. By three 10/100 Mbps LANs, the AR-B8601 is sufficient for the small business security hardware solution.

## 1.1 Specifications

- VIA EDEN ULV 500 CPU.
- VIA CN700+8237R plus Chipsets.
- DDRII memory support (533MHz).
- 3 x 10/100LAN RTL8100C.
- CF socket, SATA x 1, SATA power, USB x 4.
- Console, VGA (pinhead).
- Support PXE boot from LAN.
- Compact size.

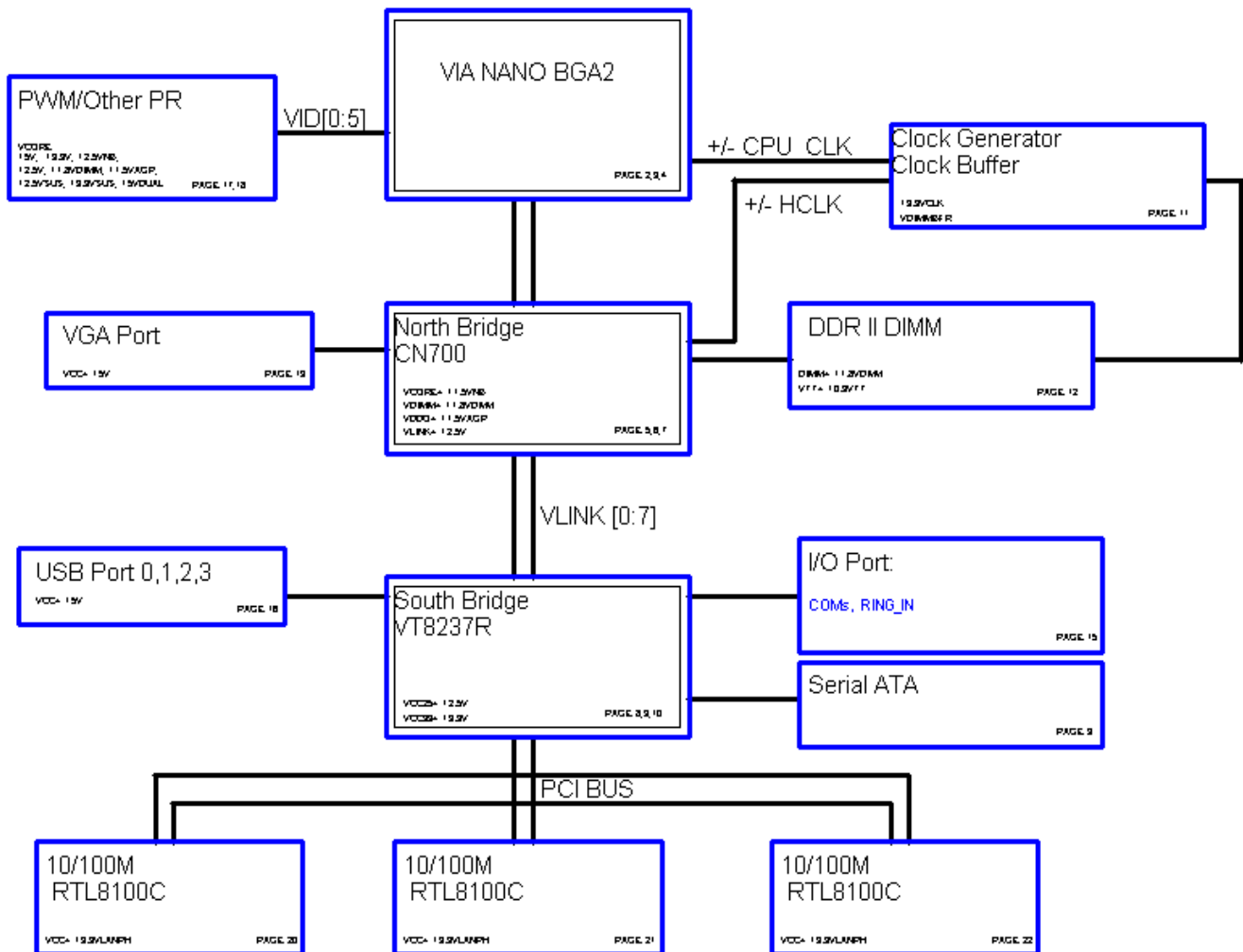
## 1.2 Package Contents

Check if the following items are included in the package :

- Quick Manual.
- AR-B8601.
- 1 x Software Utility CD.

## 1.3 Block Diagram

### Block Diagram

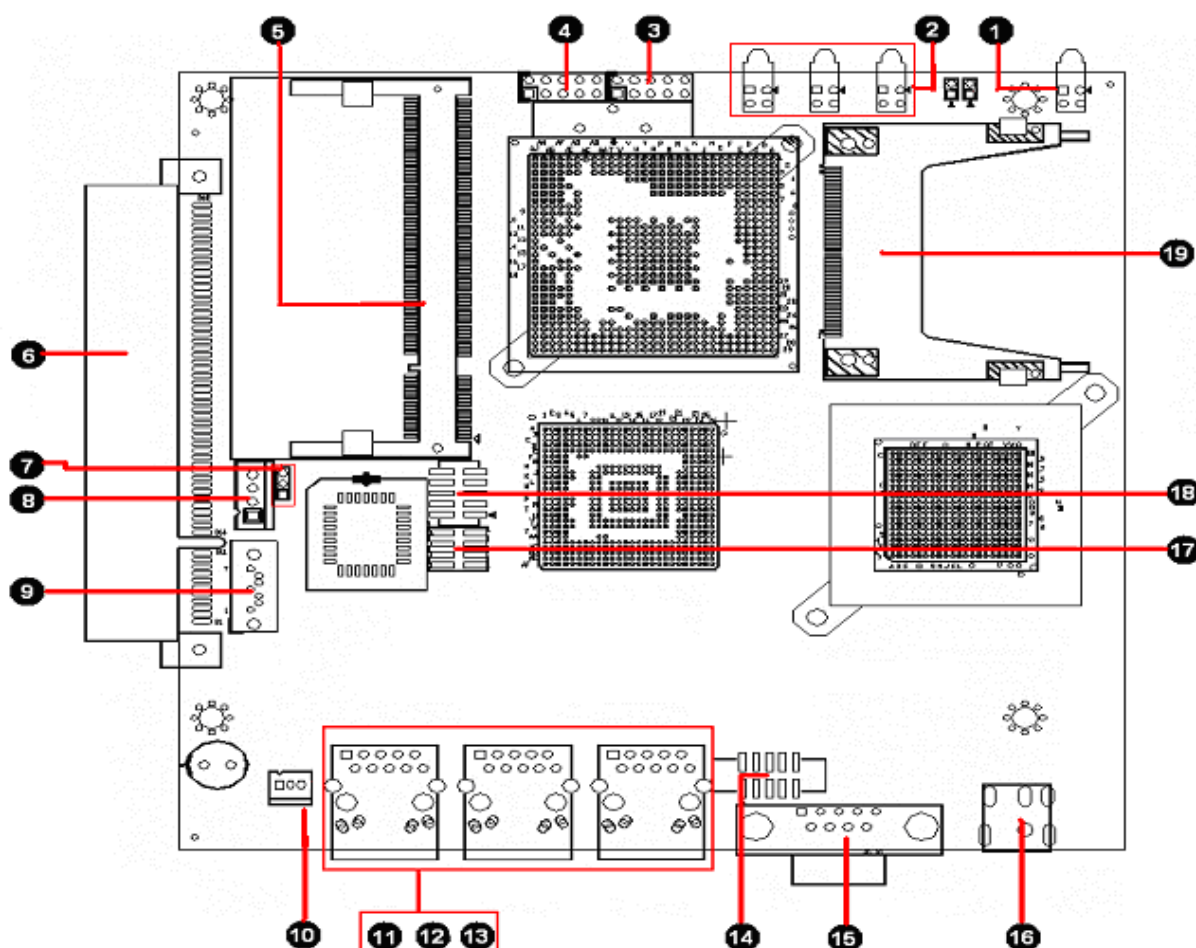




## 2 H/W INFORMATION

This chapter describes the installation of AR-B8601. At first, it shows the function diagram and the layout of AR-B8601. It then describes the unpacking information which you should read carefully, as well as the jumper/switch settings for the AR-B8601 configuration.

### 2.1 Locations (Top side)





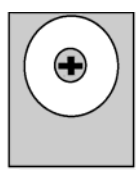





## 2.2 Connector and Jumper Setting

①	POWER,HDD LED	⑪	Ethernet RJ-45
②	LAN LED	⑫	Ethernet RJ-45
③	USB Connector1	⑬	Ethernet RJ-45
④	USB Connector2	⑭	VGA Connector
⑤	DDR2 Memory Slot	⑮	Serial Port
⑥	PCI Slot (3.3 Volt) (OPTION)	⑯	Power Jack (12V Input)
⑦	JP1: CMOS Jumper	⑰	Panel Connector
⑧	SATA Power Connector	⑱	GPIO Connector
⑨	SATA Connector	⑲	Compact Flash Connector
⑩	FAN Connector		

## 2.3 Connector and Jumper Setting Table

2.3.1 POWER HDD LED		2.3.2 LAN LED		2.3.3 USB Connector1																																					
<div><div>PWR</div><div>HDD</div></div> <div><div></div><div></div></div>	<table><tr><th>LDE1</th><th>Description</th></tr><tr><td>UP</td><td>POWER</td></tr><tr><td>DOWN</td><td>HDD</td></tr></table>	LDE1	Description	UP	POWER	DOWN	HDD	<div><div>LINK</div><div>ACTS</div></div> <div><div></div><div></div></div>	<table><tr><th>LED</th><th>Description</th></tr><tr><td>UP</td><td>LINK</td></tr><tr><td>DOWN</td><td>ACTS</td></tr></table>	LED	Description	UP	LINK	DOWN	ACTS	<div><div></div></div>	<table><tr><th>PIN</th><th>SIGNAL</th><th>PIN</th><th>SIGNAL</th></tr><tr><td>1</td><td>+5V</td><td>2</td><td>+5V</td></tr><tr><td>3</td><td>USB2-</td><td>4</td><td>USB3-</td></tr><tr><td>5</td><td>USB2+</td><td>6</td><td>USB3+</td></tr><tr><td>7</td><td>GND</td><td>8</td><td>GND</td></tr><tr><td>9</td><td>GND</td><td>10</td><td>GND</td></tr></table>	PIN	SIGNAL	PIN	SIGNAL	1	+5V	2	+5V	3	USB2-	4	USB3-	5	USB2+	6	USB3+	7	GND	8	GND	9	GND	10	GND
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2.3.10 FAN Connector		2.3.11/2.3.12/2.3.13 Ethernet RJ-45 (LAN1/LAN2/LAN3)		2.3.14 VGA Connector																																																			
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# 3 GPIO ,WATCHDOG PROGRAMMING

## GPIO Sample Code

```
//=====
// Turbo C++ Version 3.0 Copyright(c) 1990, 1992 by Borland International,Inc.
//=====
// Describe : GPIO10~GPIO17 Test utility for W83697HF.
// Date      : 06/26/2009
// Author    : Willy
//=====

#include <conio.h>
#include <stdio.h>
void Show_Help();
void Show_Fail();
void Show_Pass();

//=====
// Main procedure
//=====

int main(int argc)
{
    unsigned char  IO_PORT_BASE=0x2E; // DATA_PORT = IO_PORT_BASE + 1;
    unsigned char data;
    int result=0;

    if ( argc > 1 )
    { Show_Help();  return 1;  }

    clrscr();
    textcolor(WHITE);
    gotoxy(1, 1);  cprintf("<>=====<>");
    gotoxy(1, 2);  cprintf("|| W83697HF GPIO Test Utility v1.0 Acrosser Technology Co., Ltd.          ||");
    gotoxy(1, 3);  cprintf("<>=====<>");
}
```

```
gotoxy(1, 4);  cprintf("<=====>");
gotoxy(1, 5);  cprintf("|| Model Name      :           ||");
gotoxy(1, 6);  cprintf("|| SIO IO Base :           ||");
gotoxy(1, 7);  cprintf("<=====>");
```

```
// Show Got Parameter Informat
```

```
textcolor(LIGHTGRAY);
```

```
gotoxy(18,6);   cprintf("%X",IO_PORT_BASE);
```

```
// Enter W83697HF Config
```

```
outportb(IO_PORT_BASE,0x87);
```

```
outportb(IO_PORT_BASE,0x87);
```

```
// Set Multi-function Pins to GPIO
```

```
outportb(IO_PORT_BASE,0x29);
```

```
outportb(IO_PORT_BASE+1,(inportb(IO_PORT_BASE+1) | 0x80));
```

```
// Select GPIO Port device
```

```
outportb(IO_PORT_BASE,0x07);
```

```
outportb(IO_PORT_BASE+1,0x07);
```

```
// Set GPIO Port Active
```

```
outportb(IO_PORT_BASE,0x30);
```

```
outportb(IO_PORT_BASE+1,0x01);
```

```
// Set W83697HF GPIO10~13 to Output, GPIO14~GPIO17 to Input
```

```
outportb(IO_PORT_BASE,0xF0);
```

```
outportb(IO_PORT_BASE+1,0xF0);
```

```
// Set W83697HF GPIO10~13 to High
```

```
outportb(IO_PORT_BASE,0xF1);
```

```
outportb(IO_PORT_BASE+1,0x0F);
```

```
// Read W83697HF GPIO14~17 Status, if not High error.
```

```
data=inportb(IO_PORT_BASE+1)&0xF0;
```

```
if(data!=0xF0)
```

```
    result=1;
```

```
// Set W83697HF GPIO10~13 to Low
```

```
outportb(IO_PORT_BASE,0xF1);
outportb(IO_PORT_BASE+1,0x00);
// Read W83697HF GPIO14~17 Status, if not Low error.
data=inportb(IO_PORT_BASE+1)&0xF0;
if(data!=0x00)
    result=1;

// Set W83697HF GPIO10~13 to input, GPIO14~GPIO17 to Output
outportb(IO_PORT_BASE,0xF0);
outportb(IO_PORT_BASE+1,0x0F);

// Set W83697HF GPIO14~17 to High
outportb(IO_PORT_BASE,0xF1);
outportb(IO_PORT_BASE+1,0xF0);
// Read W83697HF GPIO10~13 Status, if not High error.
data=inportb(IO_PORT_BASE+1)&0x0F;
if(data!=0x0F)
    result=1;

// Set W83697HF GPIO14~17 to Low
outportb(IO_PORT_BASE,0xF1);
outportb(IO_PORT_BASE+1,0x00);
// Read W83697HF GPIO14~17 Status, if not Low error.
data=inportb(IO_PORT_BASE+1)&0x0F;
if(data!=0x00)
    result=1;

// Exit W83697HF Config
outportb(IO_PORT_BASE,0xAA);

if(result)
    Show_Fail();
else
    Show_Pass();
return result;
}
```

```
//=====
// Function   : Show_Help()
// Input      : -
// Change     : -
// Return     : -
// Description : Show Title string.
//=====

void Show_Help()
{
    clrscr();
    printf("GPIO Test utility for W83697HF\n\n");
    printf("VCC   #       # GND\n");
    printf("GPIO0 # EEEE # GPIO4\n");
    printf("GPIO1 # EEEE # GPIO5\n");
    printf("GPIO2 # EEEE # GPIO6\n");
    printf("GPIO3 # EEEE # GPIO7\n");
}
```



## WATCHDOG TIMER Sample Code

```
//=====
// Describe : W83697HF WatchDog timer test
// Date      : 08/12/2004
// Author    : Willy
//=====

//=====
//  Language include files
//=====
#include <conio.h>
#include <stdlib.h>
#include <stdio.h>

typedef unsigned char    BYTE;
typedef unsigned short int WORD;
typedef unsigned long int  DWORD;

//=====
//  Normal procedure
//=====
void Show_Title()
{
    clrscr();
    printf("WatchDog Test for W83697HF\n");
    printf("1. WDT.EXE 10 s ==> 10 seconds to reset.\n");
    printf("2. WDT.EXE 20 m ==> 20 minutes to reset.\n");
}

//=====
//  Main procedure
//=====
int main(int argc, char *argv[])
{
    char Time_Format;
    BYTE  IO_Port_Address=0x2E;
    BYTE Time=10; // Default is 10
```

*BYTE Format=0x01; // Default is 0x01 = Seconds*

*if ( argc != 3 )*

*{ Show\_Title(); return 1; }*

*clrscr();*

*textcolor(YELLOW+BLINK);*

*Time=atoi(argv[1]);*

*Time\_Format=argv[2][0];*

*if(Time\_Format=='m' || Time\_Format=='M')*

*Format=0x05; // Minutes*

*if(Time\_Format=='s' || Time\_Format=='S')*

*Format=0x01; // Seconds*

*// Set Watchdog*

*outportb(IO\_Port\_Address,0x87); // (EFER) Extended Functions Enable Register*

*outportb(IO\_Port\_Address,0x87);*

*outportb(IO\_Port\_Address,0x29); // Point to Global Reg.*

*outportb(IO\_Port\_Address+1,0x20); // Select Multi-Function pin, (Bit[5,6]=01 Watchdog Function)*

*outportb(IO\_Port\_Address,0x07); // Point to Logical Device Number Reg.*

*outportb(IO\_Port\_Address+1,0x08); // Select logical device 8, (Watchdog Function)*

*outportb(IO\_Port\_Address,0x30); // Device Active register*

*outportb(IO\_Port\_Address+1,0x01);*

*outportb(IO\_Port\_Address,0xF3); // Select Watchdog count mode seconds or minutes*

*outportb(IO\_Port\_Address+1,Format); // Default is second*

*outportb(IO\_Port\_Address,0xF4); // Set Watchdog Timer Value*

*outportb(IO\_Port\_Address+1,Time); // 0x00 to disable, max 0xFF*

*while(1)*

*{*

```
outportb(IO_Port_Address,0xF4);    // Read Watchdog Timer Value
Time=inportb(IO_Port_Address+1);

gotoxy(20,10);
if(Time_Format=='m' || Time_Format=='M')
cprintf(">>> After %d Minutes will reset the system. <<<",Time);
if(Time_Format=='s' || Time_Format=='S')
cprintf(">>> After %d Second will reset the system. <<<",Time);
}

return 0;
}
```

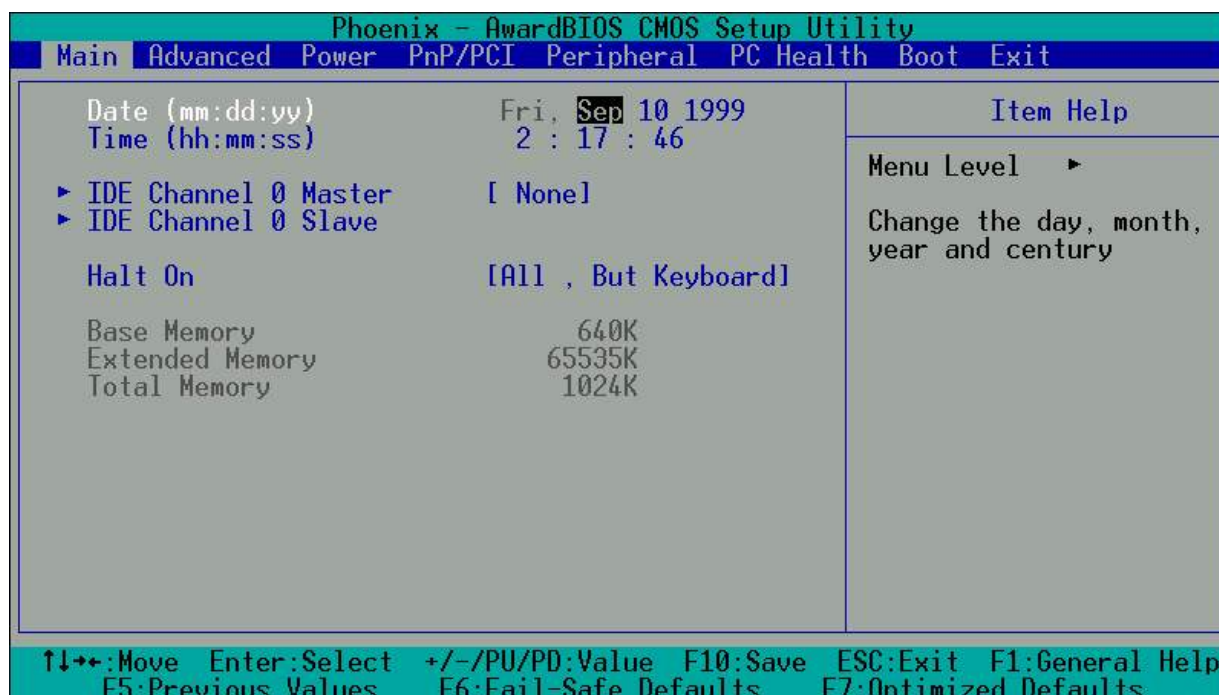
## 4 BIOS SETTING

This chapter describes the BIOS menu displays and explains how to perform common tasks needed to get the system up and running. It also gives detailed explanation of the elements found in each of the BIOS menus. The following topics are covered :

- Main Setup
- Advanced Chipset Setup
- Power Setup
- PnP/PCI Setup
- Peripherals Setup
- PC Health Setup
- Boot Setup
- Exit Setup

## 4.1 Main Setup

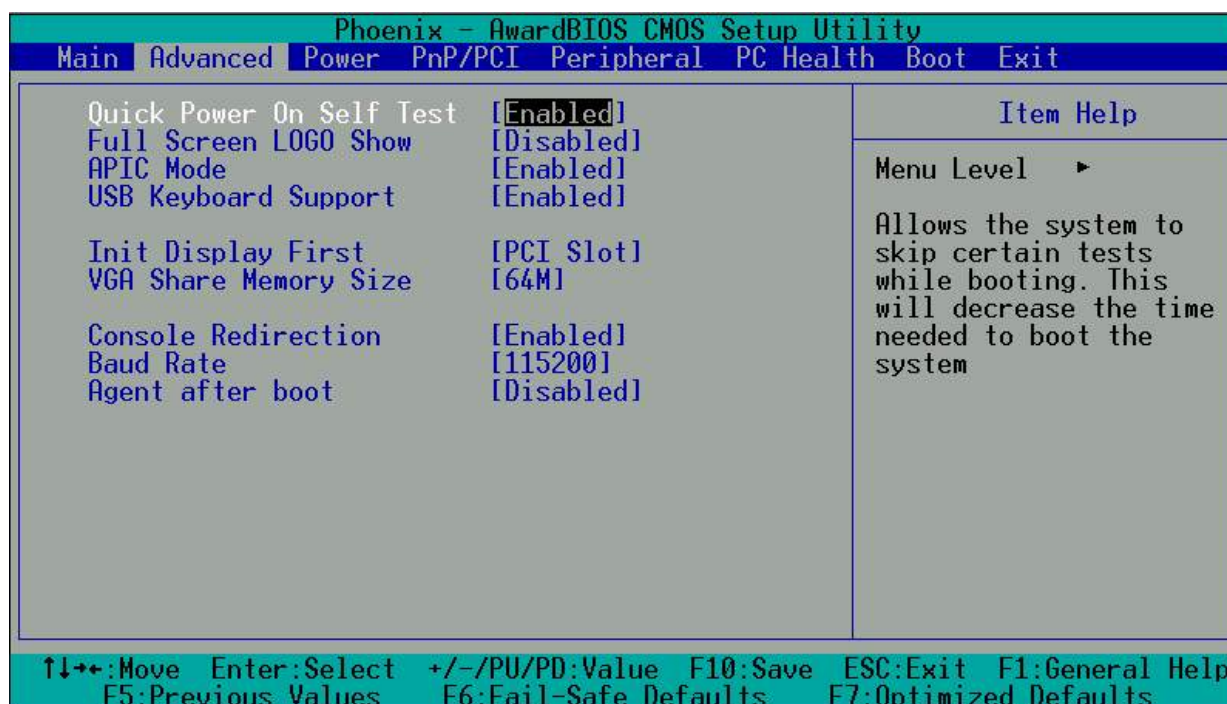
Once you enter the Award BIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. Use the arrow keys to highlight the item and then use the <Pg Up> <Pg Dn> keys to select the desired value in each item.



Note: The control keys are listed at the bottom of the menu. If you need any help with the item fields, you can press the <F1> key, and the relevant information will be displayed.

Option	Choice	Description
<b>Date Setup</b>	N/A	Set the system date. Note that the 'Day' automatically changes when you set the date.
<b>Time Setup</b>	N/A	Set the system time.
<b>IDE Channel 0 Master/Slave</b>	N/A	The onboard PCI IDE connectors provide 1 channel for connecting up to 2 IDE hard disks or other devices. The first is "Master" and the second is "Slave", the BIOS will auto-detect the IDE type.
<b>Halt On</b>	All Errors, No Errors, All but keyboard.	Select the situation in which you want the BIOS to stop the POST process and notify you.

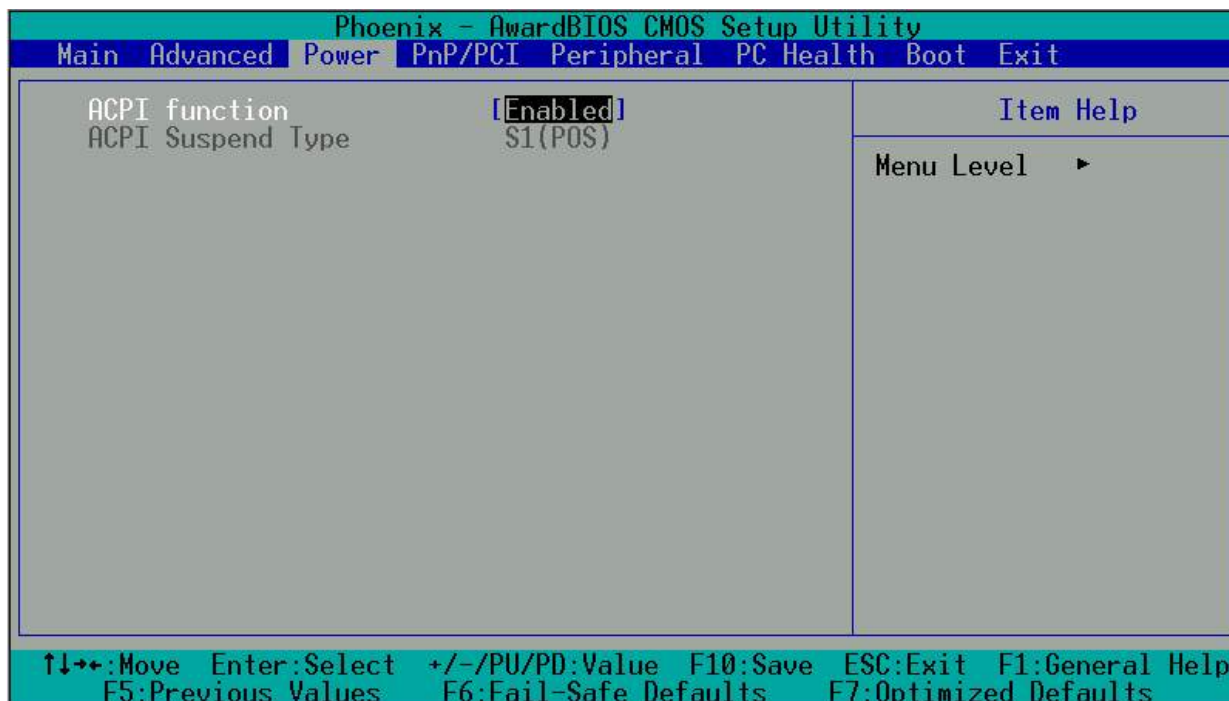
## 4.2 Advanced Chipset Setup



Option	Choice	Description
<b>Quick Power On Self Test</b>	Enabled Disabled	This category speeds up the Power On Self Test (POST) after you have powered on the computer. If it is set to Enabled, the BIOS will shorten or skip some check items during POST.
<b>Full Screen Logo Show</b>	Enabled Disabled	Select Enabled to show the full screen logo if you have an add-in BIOS.
<b>APIC Mode</b>	Enabled Disabled	Select Enable or Disable the APIC Mode.
<b>USB Keyboard Support</b>	Enabled Disabled	Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.
<b>INIT Display First</b>	Enabled Disabled	Initialize the onboard video display before initializing any other display device on the system. Thus the onboard display becomes the primary display.

<b>VGA Share Memory Size</b>	16M 32M 64M	Select VGA Share Memory Size.
<b>Console Redirection</b>	Enabled Disabled	[Enabled] for user who want to remote control the system via serial port.
<b>Baud Rate</b>	9600 19200 38400 57600 115200	The baud rate of remote control machine should the same as the system for communication.
<b>Agent after boot</b>	Enabled Disabled	Keep Agent running after OS boot

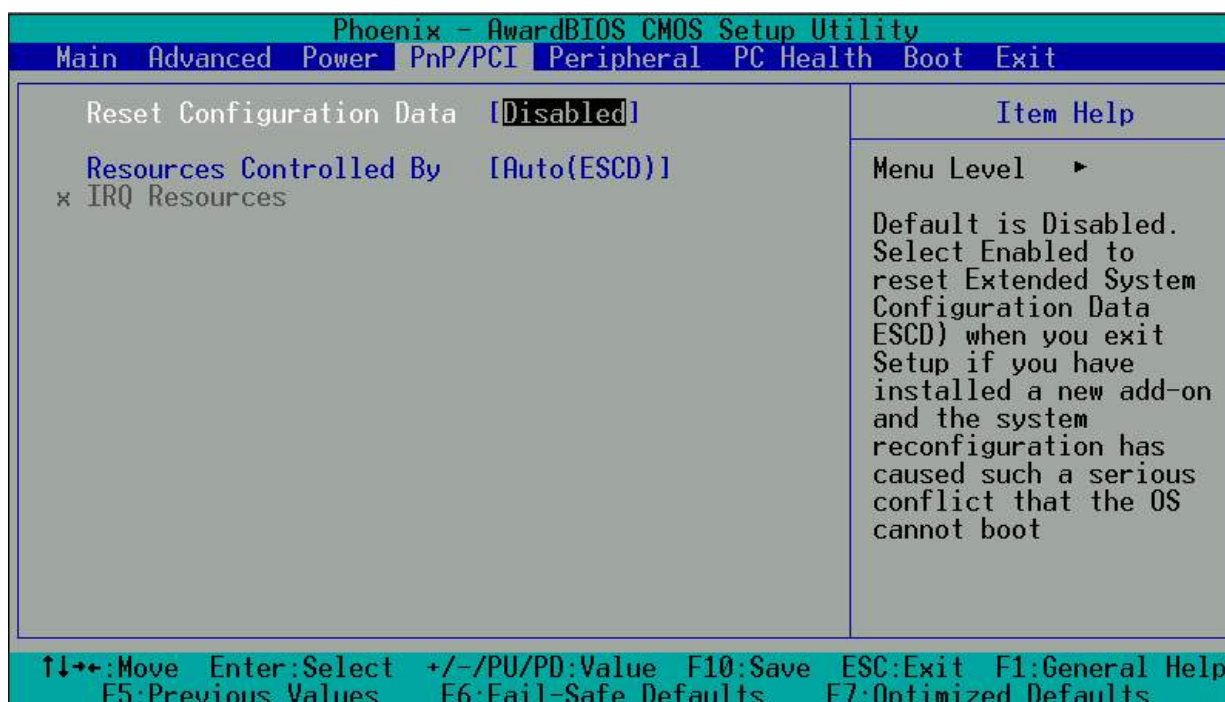
## 4.3 Power Setup



Option	Choice	Description
ACPI Function	Enabled	ACPI System Support



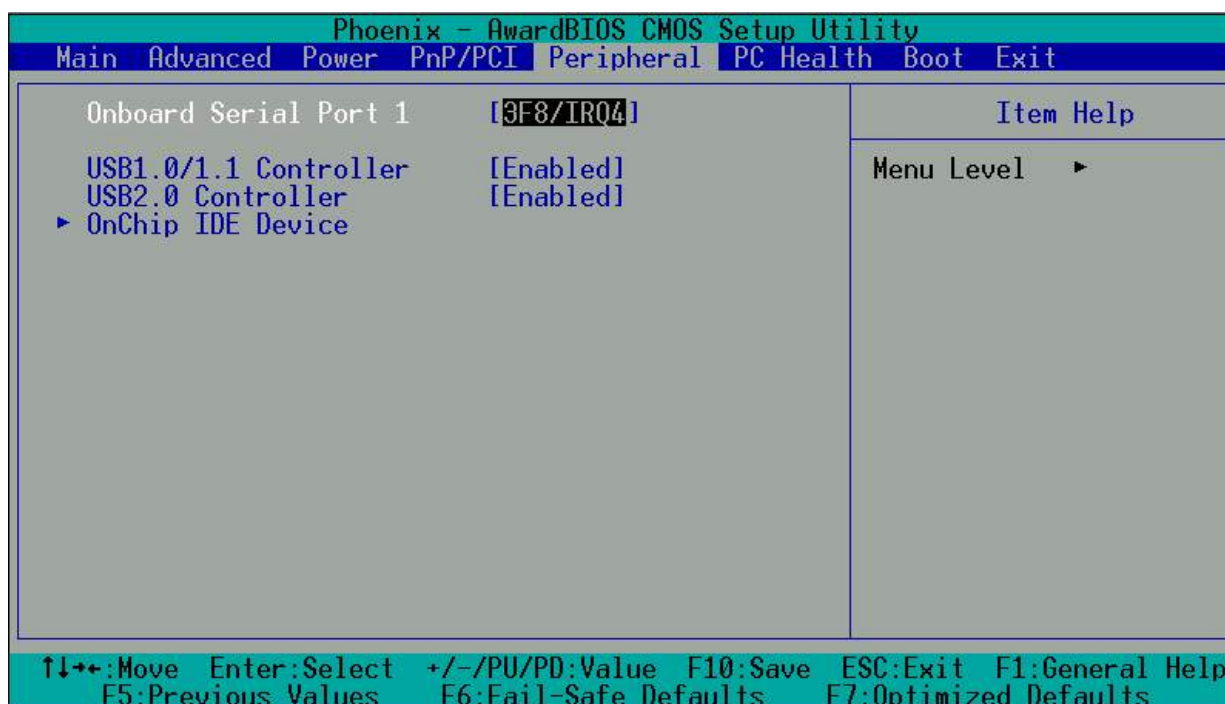
## 4.4 PnP/PCI Setup



Option	Choice	Description
<b>Reset Configuration Data</b>	Enabled Disabled	Normally, you leave this field Disabled. Select Enabled to reset the Extended System Configuration Data (ESCD) when you exit Setup. This may be necessary if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.
<b>Resources Controlled By</b>	Auto (ESCD) Manual	The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95 or

		higher. If you set this field to “Manual”, you may choose specific resources by entering each of the submenus.
<b>IRQ Resources</b>	N/A	When resources are controlled manually, assign a type to each system interrupt, depending on the type of the device that uses the interrupt.

## 4.5 Peripherals Setup

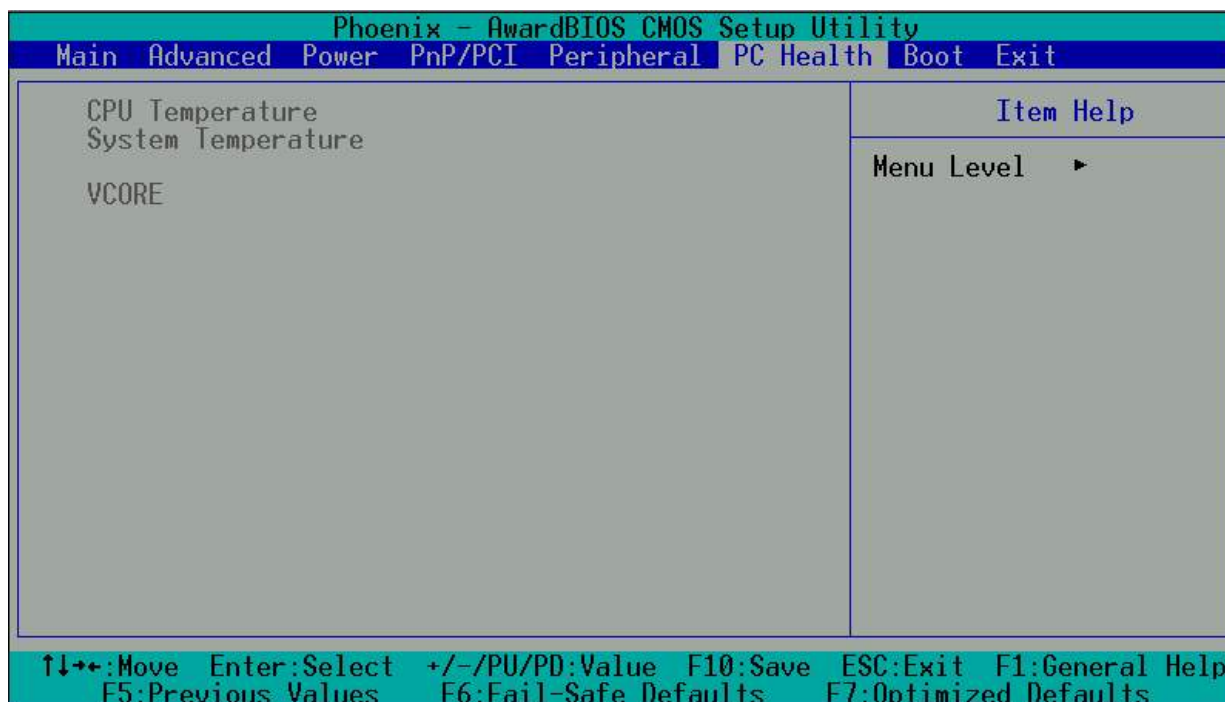


Option	Choice	Description
Onboard Serial Port 1	Serial Port 1: 3F8 / IRQ4 Serial Port 2: 2F8 / IRQ3 Serial Port 3: 3E8 / IRQ11 Serial Port 4: 2E8 / IRQ10 Serial Port 5: 2A8 / IRQ7 Serial Port 6: 288 / IRQ5	Select an address and the corresponding interrupt for each serial port.
Onboard Serial Port 2		
Onboard Serial Port 3		
Onboard Serial Port 4		
Onboard Serial Port 5		
Onboard Serial Port 6		
USB Controller	Enabled Disabled	Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

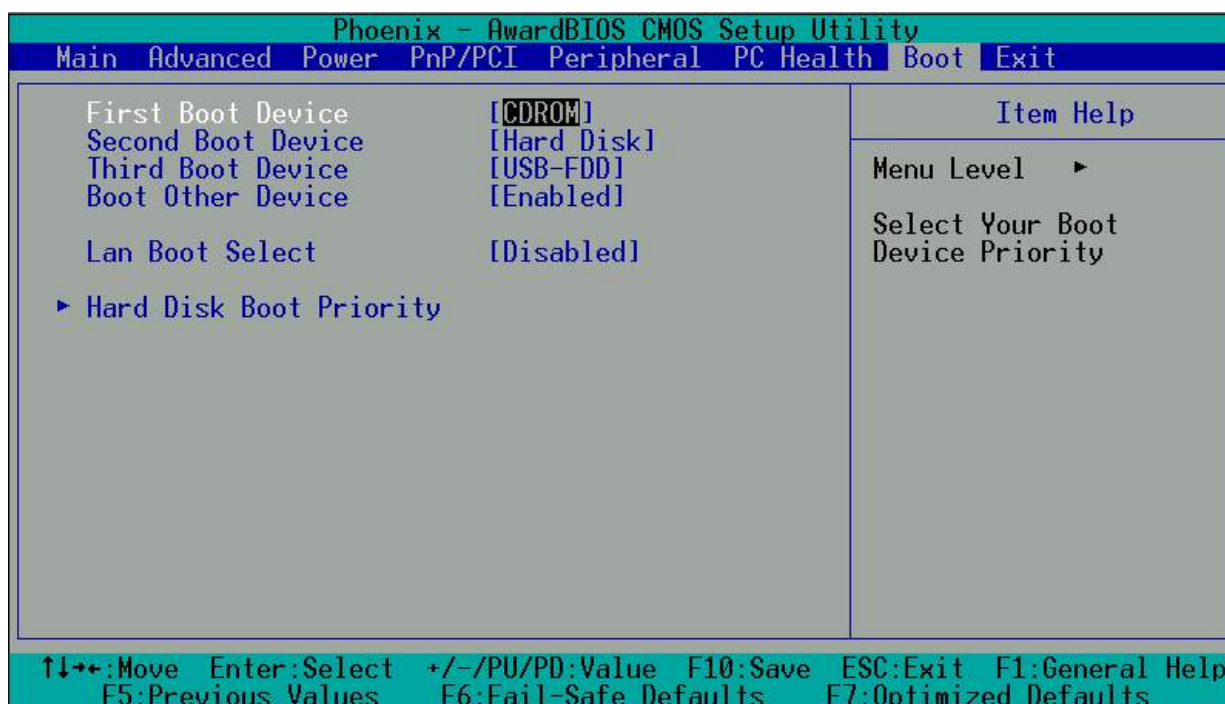
<b>USB 2.0 Controller</b>	Enabled Disabled	Select Enabled if your system contains a Universal Serial Bus (USB) 2.0 controller and you have USB peripherals.
<b>On chip IDE DEVICE</b>	Enabled Disabled	The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.

## 4.6 PC Health Setup

This section shows the parameters for determining the PC Health Status. These parameters include temperatures, fan speeds, and voltages.

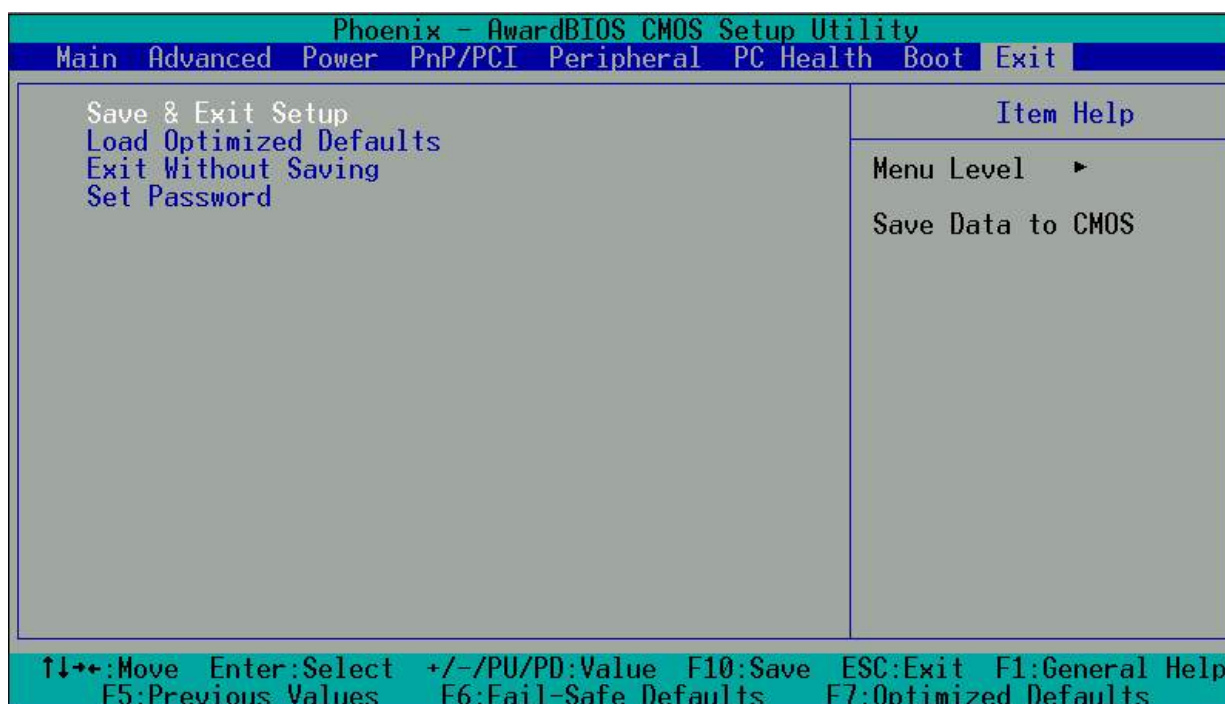


## 4.7 Boot Setup



Option	Choice	Description
First / Second / Third Boot Device/Other Boot Device	Hard Disk CDROM USB-FDD USB-CDROM LAN Disabled	The BIOS attempts to load the operating system from the devices in the selected sequence.
LAN Boot Select	Enabled Disabled	These fields allow the system to search for an OS from LAN.
Hard Disk Boot Priority	N/A	These fields set the Boot Priority for each Hard Disk.

## 4.8 Exit Setup



Option	Choice	Description
Save & Exit Setup	Press <Enter> on this item to confirm: <b>Save to CMOS and EXIT (Y/N)? Y</b>	Press “Y” to store the selections made in the menus in CMOS – a special section of the memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the setup selections stored in CMOS. After saving the values, the system will restart.
Load Optimized Defaults	When you press <Enter> on this item, you will see a confirmation dialog box with a message like this: <b>Load Optimized Defaults (Y/N)? N</b>	Press ‘Y’ to load the default values that are factory-set for optimal-performance system operations.

<b>Exit Without Saving</b>	<p>Press &lt;Enter&gt; on this item to confirm:</p> <p><b>Quit without saving (Y/N)? Y</b></p>	<p>This allows you to exit Setup without storing any changes in CMOS. The previous selections remain in effect. This will exit the Setup utility and restart your computer.</p>
<b>Set Password</b>	<p>Press &lt;Enter&gt; on this item to confirm:</p> <p><b>ENTER PASSWORD:</b></p>	<p>When a password has been enabled, you will be prompted to enter your password every time you try to enter Setup. This prevents unauthorized persons from changing any part of your system configuration.</p> <p>Type the password, up to eight characters in length, and press &lt;Enter&gt;. The password typed now will clear any previous password from the CMOS memory. You will be asked to confirm the password. Type the password again and press &lt;Enter&gt;. You may also press &lt;Esc&gt; to abort the selection and not enter a password.</p> <p>To disable a password, just press &lt;Enter&gt; when you are prompted to enter the password. A message will confirm that the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.</p>